

FIG. 1

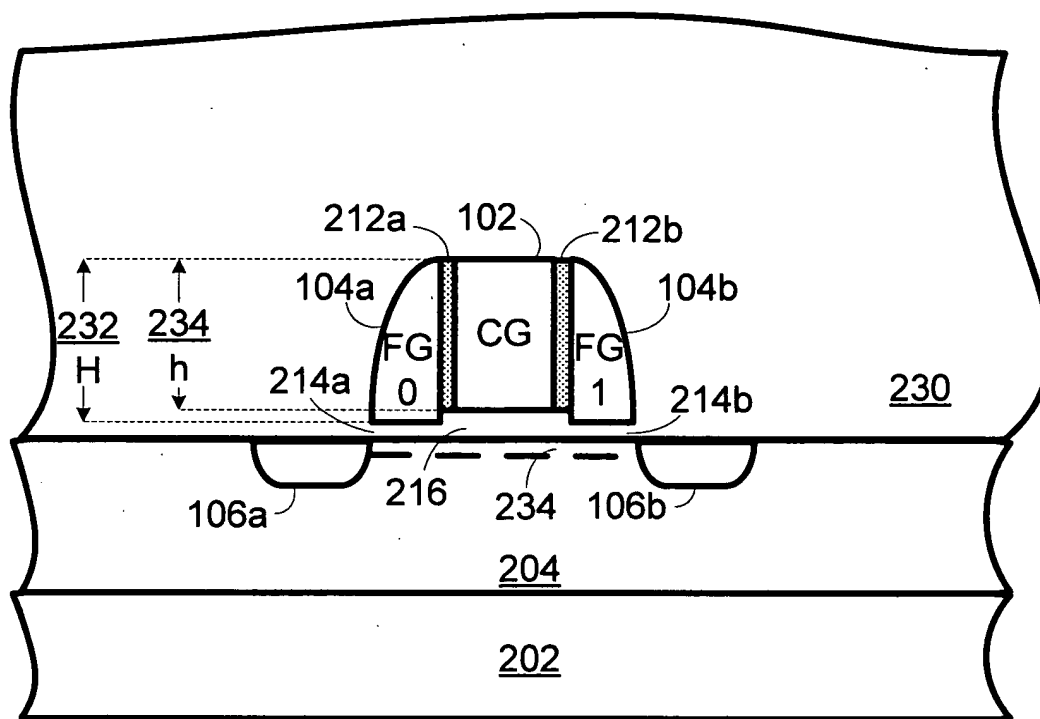


FIG. 2A

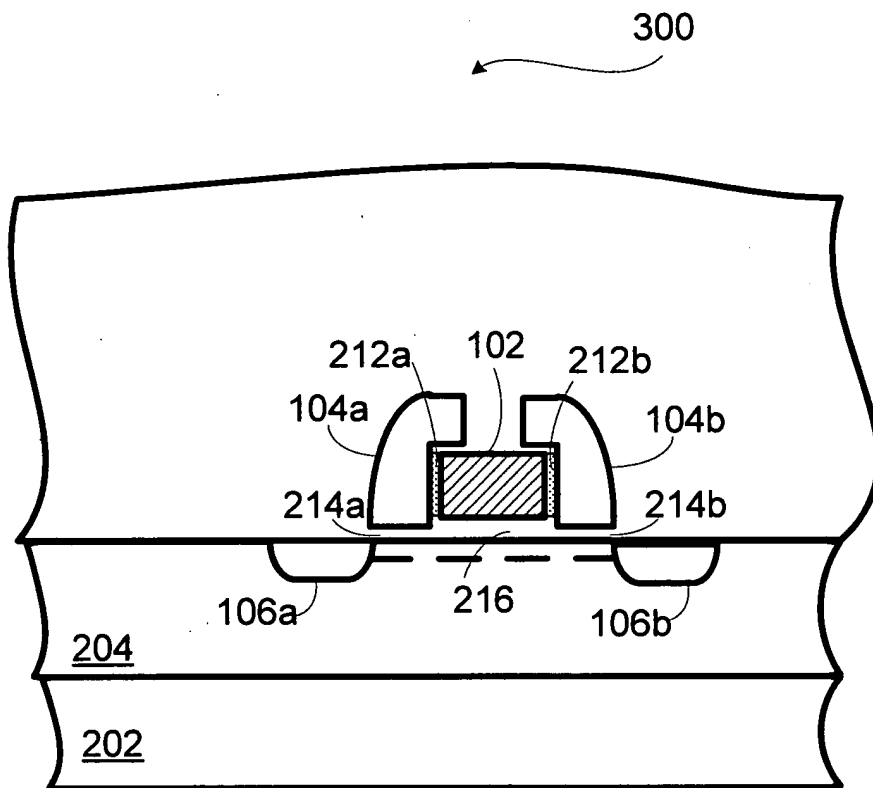


FIG. 2B

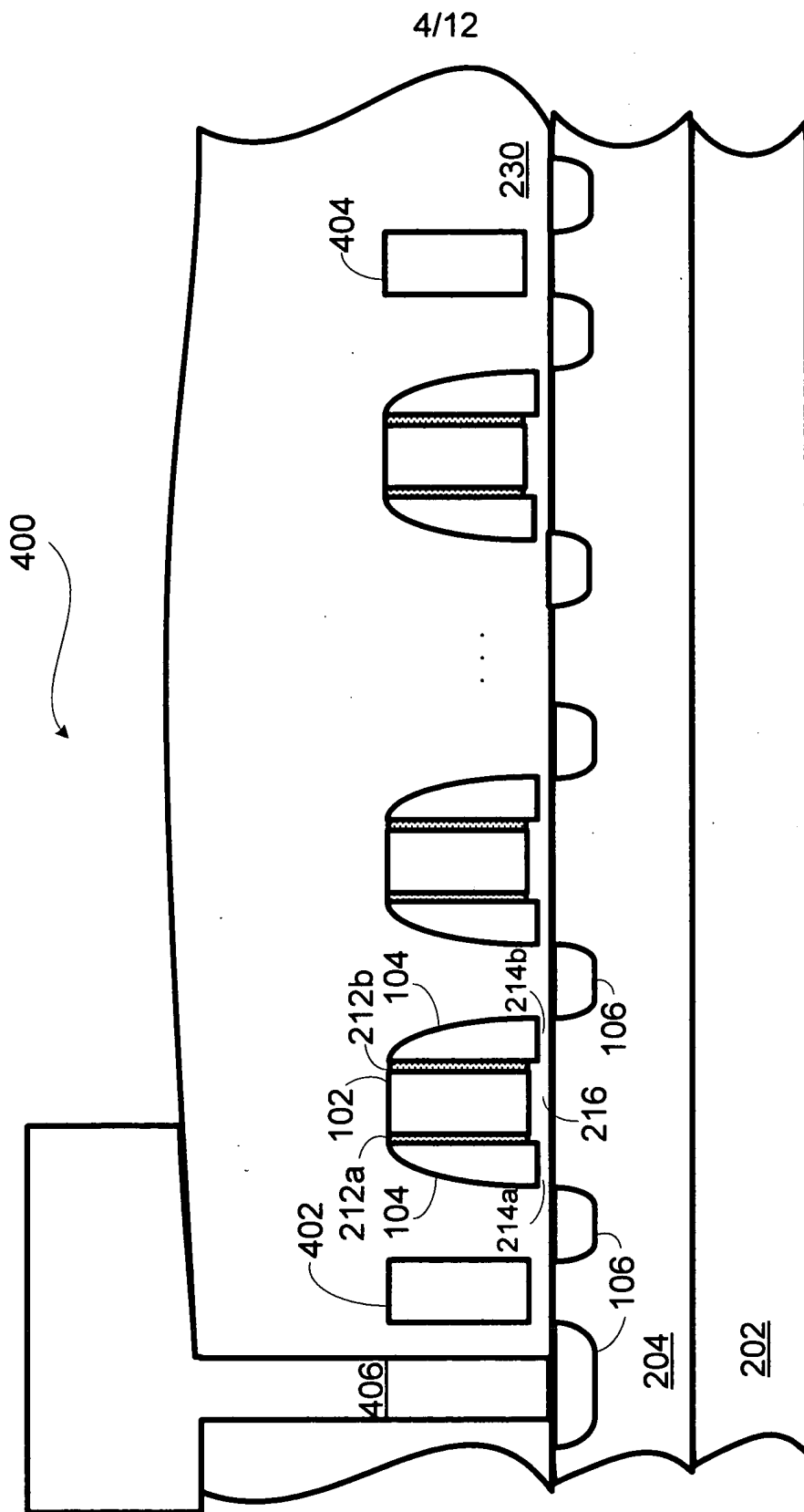


FIG. 3

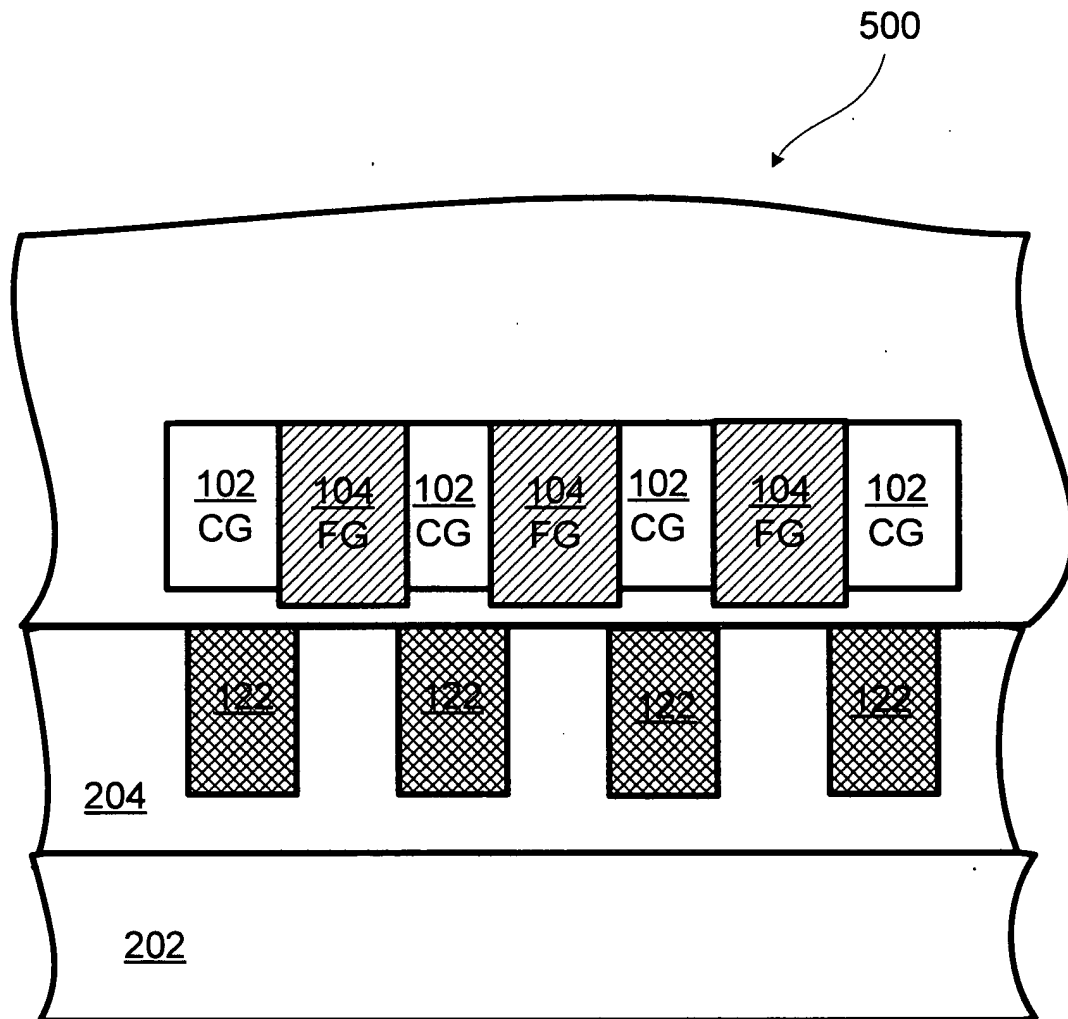


FIG. 4

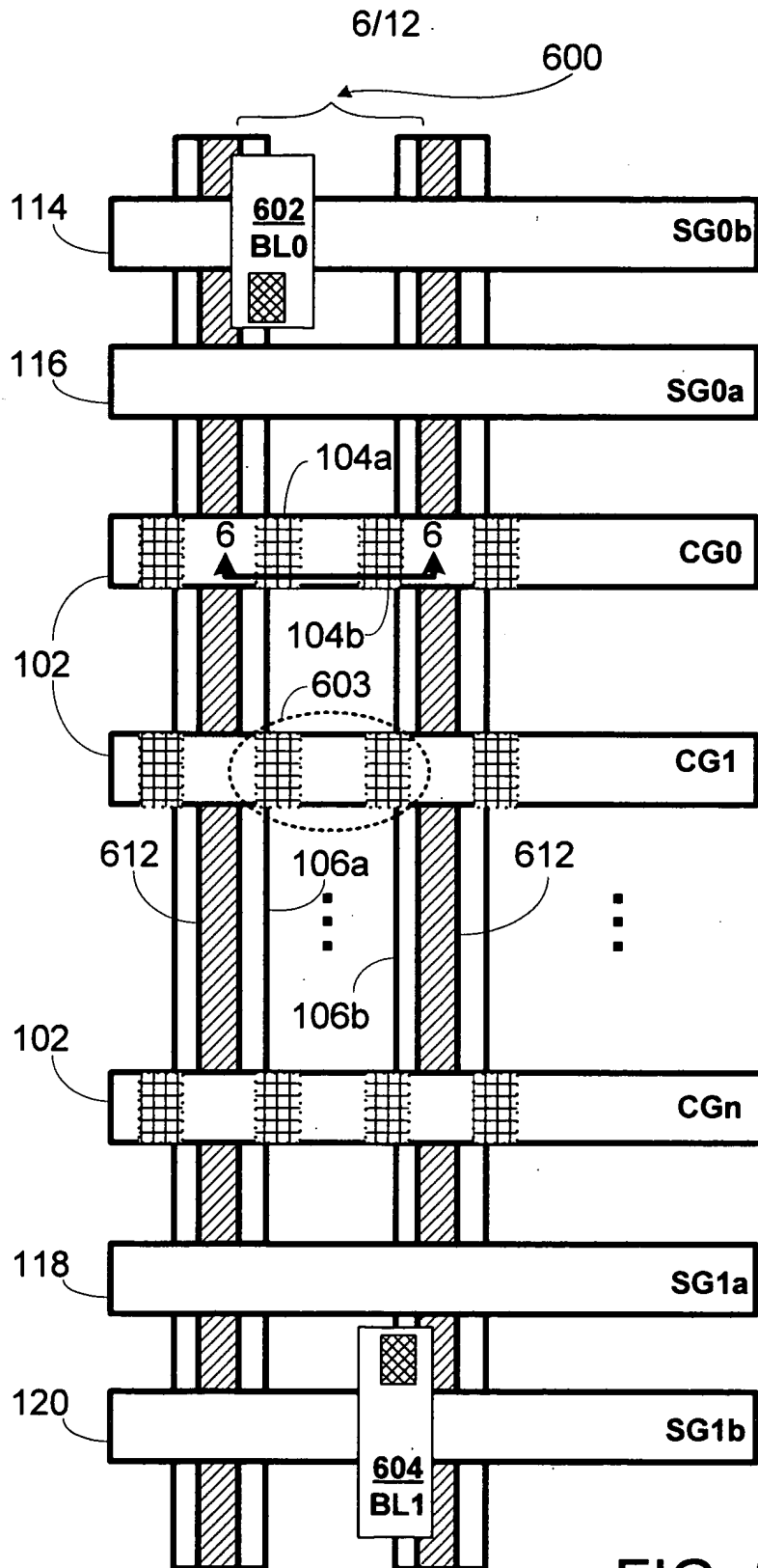


FIG. 5

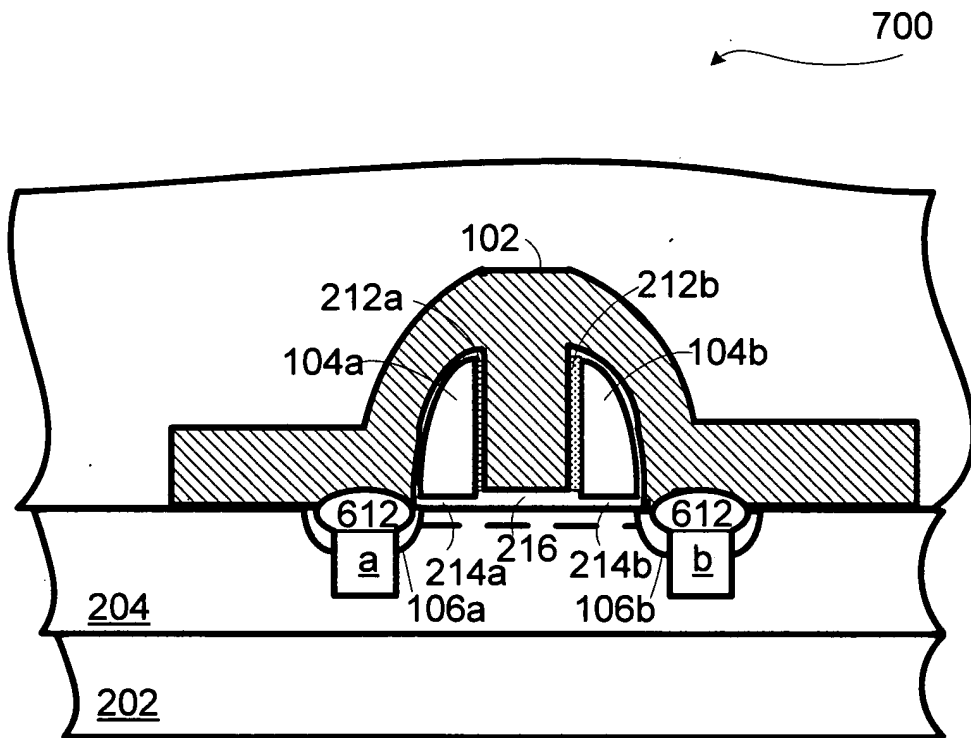


FIG. 6A

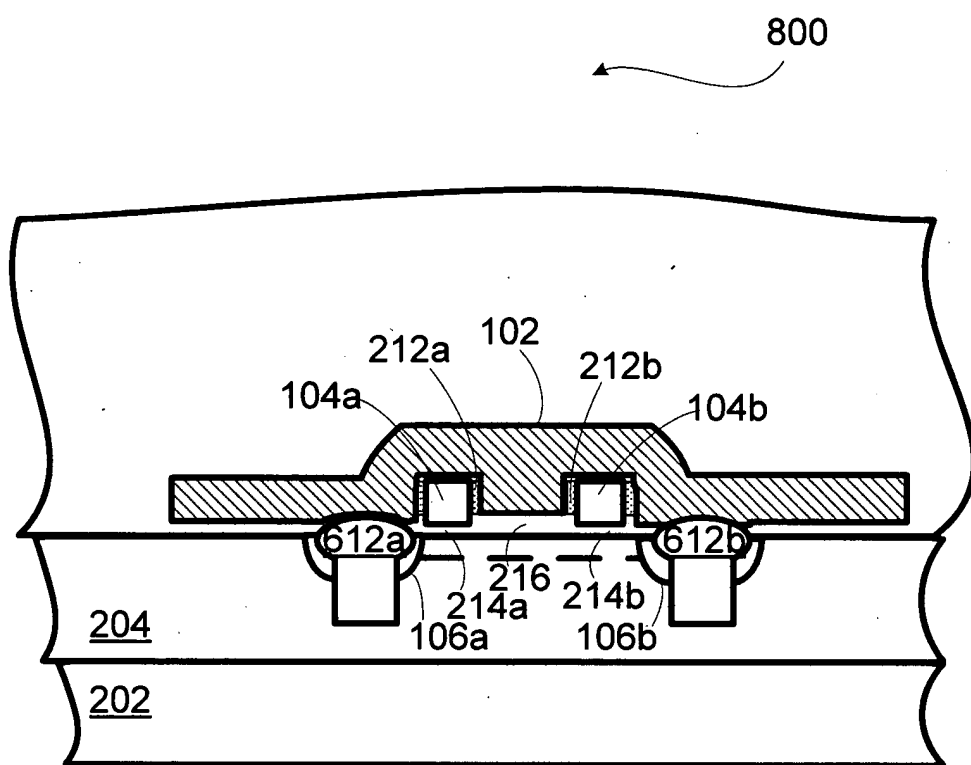


FIG. 6B



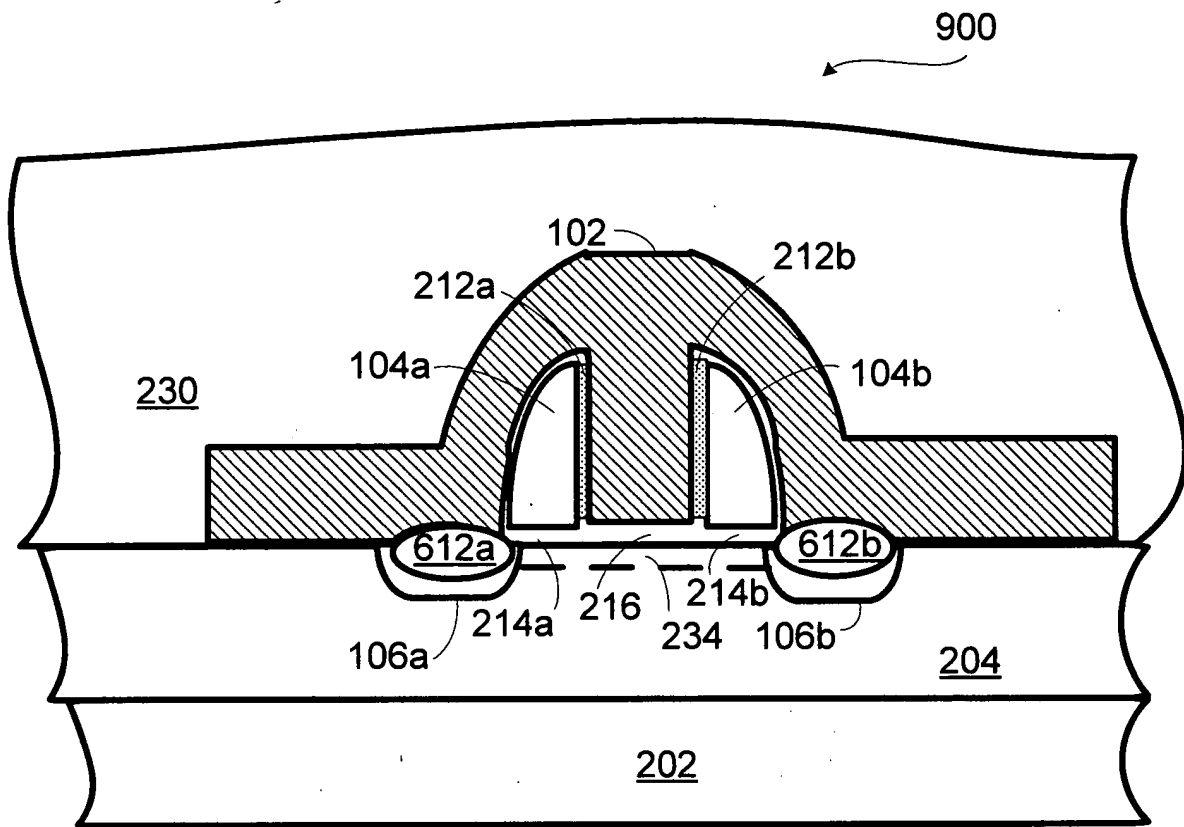


FIG. 6C

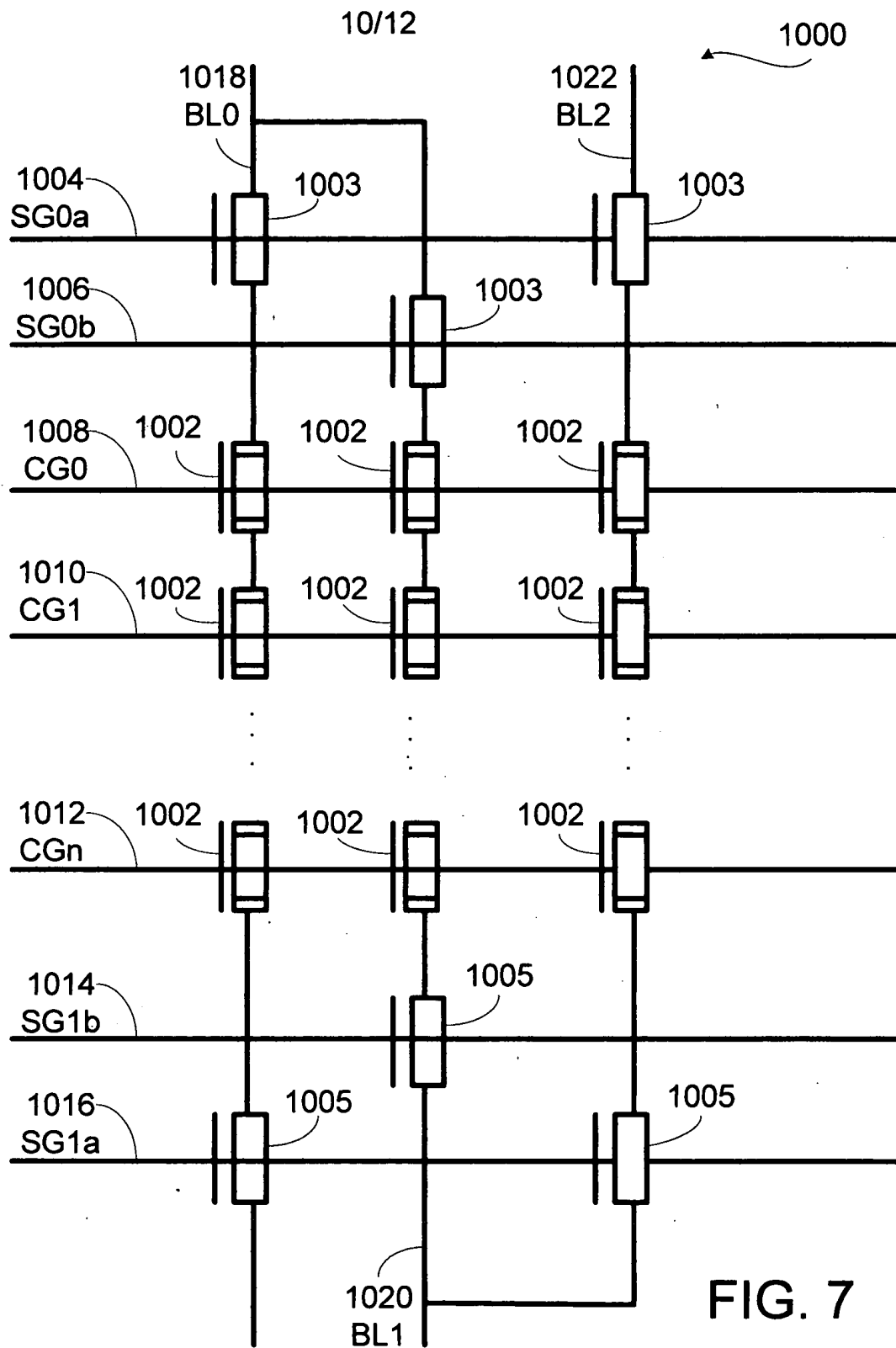


FIG. 7

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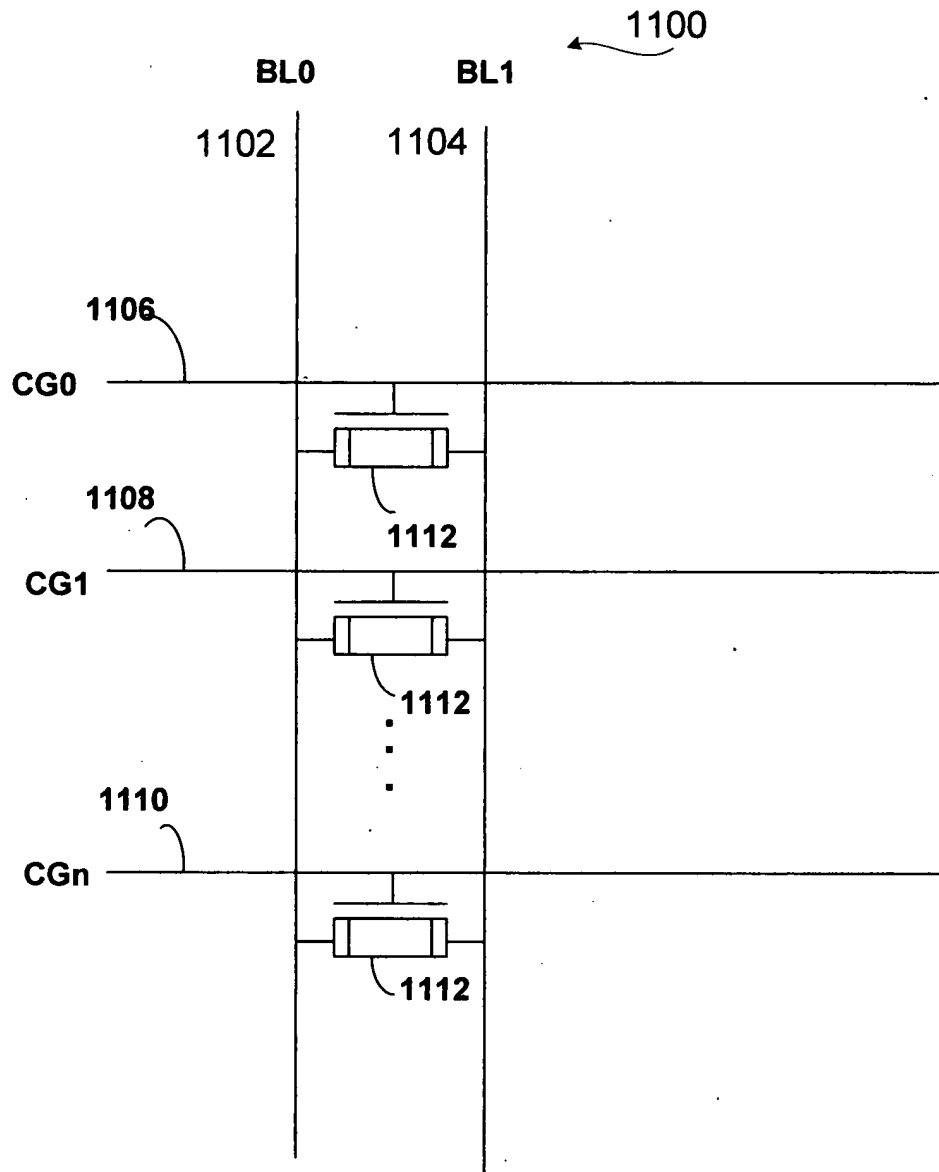


FIG. 8

## P-Type Diffusion

Erase		
	select	unselect
106a node	x or Vpp	Vpp
106b node	Vpp	Vpp
CG	Vnn	Vpp
SG0	Vpp or 0v	Vpp
SG1	0v	Vpp
well	Vpp	Vpp or Vcc

## Soft avalanche hot electron (SAHE) program

	select	unselect
106a node	x	vcc or x
106b node	Vnn	Vcc or x
CG	Vpp	Vnn
SG0	Vcc	Vcc
SG1	Vnn	Vcc
well	0v to Vcc	0v to Vcc

## Channel hot electron (CHE) program

	select(right bit)	unselect
106a node	Vpp	Vpp
106b node	0v	Vpp
CG	Vppr	0v to -2v*
SG0	0v	Vpp
SG1	0v	Vpp
well	Vpp	Vpp

## Read

	select(right bit)	unselect
106a node	0v to Vcc	Vcc
106b node	Vcc	Vcc
CG	0v to Vcc	0v to Vcc
SG0	0v to -2v	Vcc
SG1	0v to -2v	Vcc
well	Vcc	Vcc

Note:

1. Vnn = -4.5v to -10v
2. Vpp = 4v to 11v

## N-Type Diffusion

Erase(electrons ejected from floating gate)		
	select	unselect
106a node	x or Vpp	0v
106b node	Vpp or 0v	0v
CG	Vnn	Vpp or vcc
SG0	Vpp or 0v	0v
SG1	Vpp or 0v	0v
well	Vpp	Vpp or Vcc

## Channel program

	select	unselect
106a node	x	x
106b node	Vnn	0v or Vnn
CG	Vpp	Vnn
well	Vnn	Vnn

Channel hot electron (CHE) program  
(electrons injected to floating gate)

	select(right bit)	unselect
106a node	0v	0v
106b node	Vpp	0v
CG	Vppr	0v to vpp
SG0	vpp	0v
SG1	vpp	0v
well	0v	0v

## Read

	select(right bit)	unselect
106a node	0v to Vcc	0v
106b node	0v	0v
CG	0v to Vcc+2v	0v to Vcc+2v
SG0	vcc	0v
SG1	vcc	0v
well	0v	0v

3. Vppr = 0v to Vpp, ramp up or ramp down
- \* Vpp to Vpp+2v for memory string of FIG. 5

FIG. 9